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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,372	09/16/2003	Hisashi Kobayashi	D-21,289	9409

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EXAMINER

COCKS, JOSIAH C

ART UNIT

PAPER NUMBER

3749

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,372

Applicant(s)

KOBAYASHI ET AL.

Examiner

Josiah Cocks

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

2. The drawings filed on 9/16/2003 are accepted by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-7, 9, 10-16, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,411,394 to Beer et al. ("Beer") in view of U.S. Patent No. 6,282,901 to Marin et al. ("Marin").

Beer discloses in Figures 1-15 a combustion method that reduces the amount of NO_x emitted similar to that described in applicant's claims 1-7, 9, 10-16, 18, and 20. In particular, Beer shows the steps of providing a combustion device (2), feeding primary, secondary, and tertiary air with fuel into the combustion device (see Fig. 15). Beer also discloses recirculating a portion of flue gas with the air feeds (see item 17, Fig. 1).

Beer does not disclose that the air supplied is separated into an oxygen-rich stream and a nitrogen rich stream.

Marin teaches in Figures 1-4 a combustion method that is considered to be analogous art to Beer. In Marin, an air stream is separated into an oxygen rich and nitrogen rich stream with the oxygen rich stream is feed with the fuel into a combustor flame and the entirety of a nitrogen rich stream is fed into a combustion device (see col. 4, lines 21-53).

Therefore, in regard to claims 1-7, 9, 10-16, 18, and 20, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combustion method of Beer to incorporate the air separation taught by Marin as this air separation process

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aids in reducing undesirable gaseous emissions into the atmosphere (see Marin, col. 4, lines 9-14).

6. Claims 8, 17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beer in view of Marin as applied to claims 1 and 10 above, and further in view of U.S. Patent No. 4,257,763 to Reed ("Reed").

Marin in view of Beer teach all the limitations of claims 8, 17, and 21 except that water is fed with the nitrogen-rich stream.

Reed teaches a low NO_x burner and method of combustion using the burner that is considered to be analogous art to Beer. In Reed, liquid water (70) is supplied to mix with an air stream (see col. 4, lines 45-48).

Therefore, in regard to claims 8, 17, and 21, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combustion method of Beer to incorporate adding liquid water to an air stream of a combustor as taught in Reed for the desirable purpose of providing NO_x reduction when combusted (see Reed, col. 4, lines 48-60).

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beer in view of Marin as applied to claim 10 above, and further in view of U.S. Patent No. 5,809,910 to Svendssen ("Svendssen").

Beer in view of Marin teach all the limitations of claim 19 except possibly for injecting a reducing agent that reacts with NO_x to form N₂ for NO_x reduction.

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Svendssen teaches a combustion method that is considered analogous art to Beer. In Svendssen, a reducing agent (3) is injected that functions to reduce NO_x emissions from a combustion device (see col. 3, line 59, through col. 4, line 5).

Therefore, in regard to claim 19, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combustion method of Beer to incorporate injecting a reducing agent as taught in Svendssen to reduce the emission of undesirable compounds, such as NO_x, during combustion.

Conclusion

8. This action is made non-final. A THREE (3) MONTH shortened statutory period for reply has been set. Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents to Leikert et al., Munk, Tokuda et al., and Breen et al., and German Patents DE 38 07 214, and DE 28 37 156 are included to further show the state of the art concerning methods of NO_x reduction.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Josiah Cocks whose telephone number is

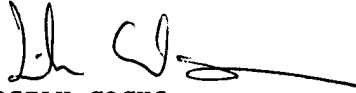
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(571) 272-4874. The examiner can normally be reached on weekdays from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ira Lazarus, can be reached at (571) 272-4877. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://portal.uspto.gov/external/portal/pair>. Any questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

jcc
March 4, 2005


JOSIAH COCKS
PRIMARY EXAMINER
ART UNIT 3749